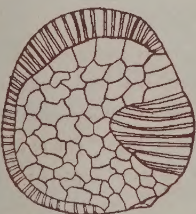
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(表紙カットの説明)

ミズワラビの胞子のう (伊藤　洋)

[The cut on the cover]

A sporangium of *Ceratopteris thalictroides* Brongn. (H. Ito)

朝比奈泰彦*: 地衣類雑記 (§135-136)

Yasuhiko ASAHINA*: Lichenologische Notizen (§135-136)

§135. On the Occurrence of Cladonia submitis Evans in Japan.

In 1942 Asahina and Sasaki[1] isolated from *Cladonia mitis* specimens collected on Mt. Hakusan, Hondo, rangiformic acid along with d-usnic acid. The rangiformic acid yields on recrystallization from the G. E. solution under cover glass characteristic groups of trichites (Fig. 1), which may be utilized for the detection of the same acid. Evans,[2] who had studied the microchemical features of the *Cladonia* specimens distinguished the crystal types originated by the same procedure as A, B, C and D, of which D is identified with rangiformic acid. Among *Cladonia mitis* specimens (P−) he found a group which produce D type, sometimes may contain A or B but never C. Another Group which exhibits C-type crystals (Fig. 2) contains neither B nor D at the same time. Evans segregated the latter group from *Cladonia mitis* and called it *Cladonia submitis* Evans. In 1951 the writer and Sakurai[3] extracted a substance, pseudonorrangiformic acid $C_{20}H_{36}O_6$ (m.p. 189°) from *Cladonia submitis* kindly submitted by Dr. Evans and recognized the identity of the crystal C of Evans with the pseudonorrangiformic acid. At the same time it was revealed that some Japanese specimens of *Cladonia mitis* contain pseudonorrangiformic acid instead of rangiformic acid. On account of scarcity of specimens



Fig. 1. Rangiformic acid recrystallized for G. E. solution on a slide glass. Magnified.



Fig. 2. Pseudonorrangiformic acid recrystallized from G. E. solution on a slide glass. Magnified.

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1) 日化: Bull. Chem. Soc. Japan, **17**: 495 (1942).

2) Rhodora, **45**: 417-438. (1943).

3) Journ. Pharmaceut. Soc. Japan, **71**: 1166 (1951).

the distribution area of both species in Japan is not precisely demarcatable. So far as I can determine from the materials placed at my disposal *Cladonia submitis* predominates in northern Japan including Hokkaido, Kuriles and Saghalien, while *Cladonia mitis* containing rangiformic acid is restricted on localities lying within 36° and 40° N. Lat.

Cladonia mitis Sandst.

Localities of specimens containing the rangiformic acid: Mt. Hakusan (白山), Prov. Kaga; Mt. Norikura (乗鞍岳), Mt. Shirouma (白馬岳), Prov. Shinano; Magawa (真川) Prov. Ettyu; Matsukawa-Ura (松川浦), Prov. Iwaki; Mt. Ganjiu (岩手山), Prov. Rikuchu.

Localities of specimens containing neither rangiformic acid nor pseudonorrangiformic acid: Hokkaido-Nibuse (仁伏), Prov. Kushiro; Mt. Apoi (アポイ岳), Prov. Hidaka; Shizukari (シヅカリ), Prov. Iburi; Hondo- Mt. Kimpoku (金北山), Ins. Sado; Oze-Lake (尾瀬沼), Prov. Iwashiro; Mt. Bandai (磐梯山), Prov. Iwashiro; Mt. Shirane (Nikko) (白根山-日光), Prov. Kozuke; Mt. Tanigawa (谷川岳), Prov. Kozuke: Mt. Shirouma (白馬天狗原), Mt. Iwasuge (岩菅山), Mt. Asama (浅間鬼押出), Mt. Ontake (御嶽山), Prov. Shinano; Mt. Yatsugatake (八ケ岳), Lake districts of Mt. Fuji (富士五湖), Prov. Kai; Mt. Rokko (六甲山), Prov. Settu; Shikoku- Mt. Kenzan (剣山), Prov. Awa.

Cladonia submitis Evans.

Localities of specimens containing pseudonorrangiformic acid: Paramushir (幌筵), Kuriles; Sakaehama (栄浜), Saghalien; Hokkaido- Mt. Daisetsu (大雪山) and Mt. Ashibetsu (芦別岳), Hokkaido- Mt. Hakkoda (八甲田), Prov. Mutsu; Mt. Ganjiu (岩手山), Prov. Rikuchiu; Mt. Chokai (鳥海山) & Mt. Gassan (月山), Prov. Uzen; Mt. Tateyama, (立山), Prov. Ettyu; Mt. Hiuchi (燧岳), Prov. Iwashiro, Mt. Shibutu (至仏岳), Prov. Kozuke.

1942 年に筆者は佐々木豊作氏[1]と共に加賀白山産の *Cladonia mitis* から抽出した脂肪系の酸をランギフォルム酸と決定し，其の G. E. 液からスライドグラス上に結晶させた形体と該地衣体からのアセトンエキスをミクロ法によつて G. E. 液から結晶させたものとが一致したので，此結晶を目標とし任意の *Cl. mitis* 標本中にランギフォルム酸の有無を判定することができた。その文献[4]では其の Fig. 7 の a 及の b 如き形のもの即本報告の Fig. 1 の如きものがランギフオルム酸の常型と考へたが又文献の Fig. 7 の c の如き形を呈するものもランギフルム酸の畸化された形と考へて之を生ずる地衣体

4) 植研: Journ. Jap. Bot., **17**: 624-626 (1941).

もランギフォルム酸含有として算入した。所が 1943 年に Evans[2] 氏は Cladina 亜属の各種の地衣からミクロ法で A, B, C, D の四種の結晶を分別し殊に *Cl. mitis* と従来称せられて居る PD- の標本は D を主として生じ之に A 又は B を組合せたものを生ずる一群と，C 結晶を主として発生し B や D とは決して共存しない一群の存在を確認し，此の C 結晶を生ずるものを *mitis* から分離して *Cl. submitis* なる新種を作た。次いで 1951 年に筆者は桜井欽夫氏[3] と共に Evans 博士から寄贈された *Cl. submitis* の標本 102gr. を化学的に所理して α-ウスニン酸の融点 189° の無色結晶体 $C_{20}H_{36}O_6$ を分離し，後者をプソイドノルランギフォルム酸と命名し且つ其ミクロ法による G. E. 液からの結晶形が Evans 氏の C 結晶及筆者の c 結晶と同一であると認め，筆者が嘗て *Cl. mitis* 中に包含させた c 結晶を生ずる標本は *Cl. submitis* Evans 其物であつた事が判明した。

以上の結果 *Cl. submitis* Evans は日本にも産することが証明されたが其分布は主として中部日本以北，更に小分すれば岩代の燧岳，及び上野の至仏岳と越中立山を連ぬる線以北で北海道，樺太，千島に及で居る。之に対してランギフォルム酸を含む *Cl. mitis* は筆者の乾園中には加賀白山室堂附近の品が主で他は信濃乗鞍，白馬，越中真川，陸中岩手山，低地で磐城の松川浦産のものがある。ランギフォルム酸もプソイドノルランギフォルム酸も含まない PD- の *Cl. mitis* 標本の数は前二者を遙に凌駕して居るが，本土では摂津の六甲山を南限して四国では剣山産の一標本があり山陰，山陽及九州の標本は未知である。

§136. **Usnea pseudintumescens** Asahina, Lich. of Japan, **3**: 83 (1956).

Thallus prostrate or suberect, rather stout, up to 10 cm long, dull pale green in the living state, afterwards becoming grayish straw colored. Primary base ±1.0 mm thick, pale brownish; principal stem immediately above the base influated, up to ±2.0 mm thick, glabrous, frequently sympodially branched and forming a luxuriant tuft. Primary branches up to 1.5 mm thick, attenuated toward the base, infrequently articulated, terete or somewhat deformed and scrobiculate, divided dichotomously and sympodially below, abruptly attenuated and more frequently branched at the apices, showing no conspicuous summit (deliquescent). All branches are loosely dispersed with 1–5 mm long fibrils, epapillose but verruculose, verruculae afterwards becoming soralia, simple and punctiform or arranged in irregular linear marks. Soredia isidioid. Apothecia unknown. Cortex rather soft, 40–70 μ thick, inner side lacerate, medulla 200–450 μ thick, its hyphae immediately infra cortex turgescent, 6–10 μ wide; axis more or less depressed, 200–300 μ thick, A. Q. ±20% at the most inflated portion.

The PD reaction of the medulla is permanent bright yellow, while K is negative.

The anticipated psoromic acid test by the usual microchemical method was difficult, perhaps on account of the presence of some impurities. But by the paper partition chromatography the presence of psoromic acid was proved. Solvent : ethylacetate : pyridine : water=2 : 1 : 1, at 19.5°, 1° 25′.

	Rf
Aceton extract of the lichen	0.53
Psoromic acid (control)	0.53

Locality: Chino-machi, Prov. Shinano, Central Japan.

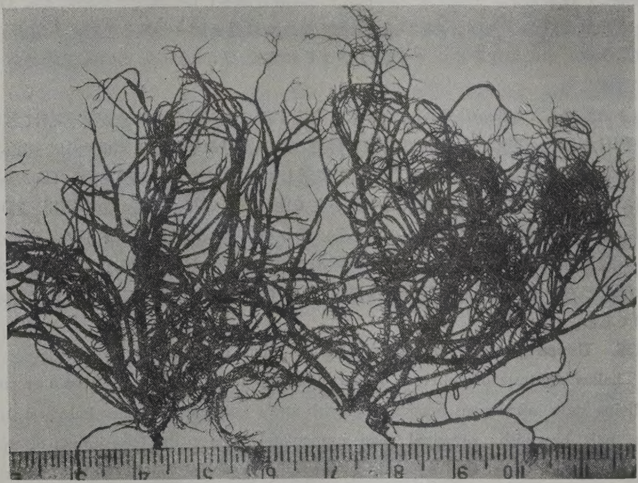


Fig. 3. *Usnea pseudintumescens* Asahina. ×1.

Among the lichen specimens recently collected by Mr. T. Matsuoka in Chino-machi, Prov. Shinano, I found several individuals of *Usnea pseudintumescens* Asahina. This species was established on the basis of a single specimen long time ago collected in northern Japan (Prov. Rikuzen) by G. Toba. This type specimen is not a perfect lichen body but a fragment as it lacks primary base. So to make the identification more complete, I have measured the RS-value of a section of the newly found specimen and could, to my great satisfaction, confirm its total coincidence with the RS-value of the type specimen : a section of an inflated portion of a primary branch (diam. 1.34 mm) gave c : m : a=60 : 450 : 255 (μ), from which its RS value etc. may be calculated as

RS=1 : 7.5 : 4.2 and A.Q.=ca. 19% ; △AMC being its graph, with respect to the base line XY where $\theta=21°$

According to Asahina (l.c. p. 84) a section of the type specimen (diam. 1.32mm) gave c : m : a=82 : 430 : 270 (μ), from which its RS value etc. may be calculated as RS=1 : 7.5 : 4.2 and A.Q.=ca. 20.5% ;

△A′M′C′ being its graph with respect to the common base line XY, where $\theta=22°$

The inside of cortex in the transverse section showed incised outline and medullar hyphae immediately within the cortex are turgescent, on which also was emphasized by the description of the type.

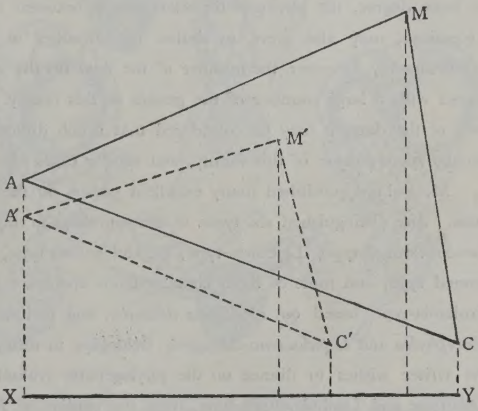


Fig. 4. △AMC is the graph of an RS of a specimen collected in Chino, Prov. Shinano. △A′M′C′ is the graph of an RS of the type specimen of *Usnea pseudintumescens* Asahina.

昭和 31 年夏 (1956) に出版した日本之地衣第 III 冊には *Usnea intumescens* Asahina の直ぐ後に之と外形が似て居る *Usnea pseudintumescens* Asahina と云ふものが記載されて居る。前者は材料も豊富で著者自身も屢々産地で親しく観察したもので其記載も充分にすることができたが後者は 1928 年に鳥羽源蔵氏が陸前気仙郡（岩手県）高田町附近で採集したタツタ一箇の而も不完全な箇体を基礎としたもので新種として発表するのは冒険の感が深かつた。処が最近松岡敏郎君が信州茅野在で採集した標本は正に此の *pseudintumescens* に充てるべきもので然も極めて発育の良い完全標本であるので之を使用して本種の記載を完全なものとした。但し此標本のアセトンエキスから普通のミクロ法でプソローム酸の結晶を得ることは成効しなかつたがペーパークロマトグラフヒーで対照成分プソローム酸と全く一致するスポツトを得て安心した。尚枝条の最も膨大せる部分の RS 及び其グラフを作た処タイプ品のそれ等に全く一致することを認め更に確証の信用度を高めた。

Hiroshi INOUE*: **Studies on spore germination of Hepaticae (3)**** *Brachiolejeunea sandovicensis* (Gott.) Evans and *Frullania hamatiloba* Steph.

井 上 浩*: 苔類の胞子発芽 (3)** チヂレウロコゴケとカギフルラニゴケ

The family Lejeuneaceae includes many genera and is one of the most difficult groups. Phylogenetic relationships between those genera are rather complicated, and only by morphological aproach it may be unable to obtain a satisfactory evolutional system of this family. The sporeling pattern, which is generally thought to indicate, in some degree, the phylogenetic relationships between higher taxonomic groups of Hepaticae, may also serve to define the affinities of genera of the Lejeuneaceae. Unfortunately, however, the number of the data on the sporelings is very small compared with a large number of the genera of this family. As a reason of such scantiness of the data, it may be considered that much difficulties are present throughout on the spore-culture of this family, aed similar cases also exsist in the Frullaniaceae.

M. Fulford published many excellent papers on the sporelings of the Lejeuneaceae. She distinguished six types of the sporelings in this family, Lophoejeunea-type, Leuconejeunea-type, Lejeunea-type, Ceratolejeunea-type, Stictolejeunea- and an unnamed type, and most of them contained few species. For *Frullania* she proposed Frullania-type based on *Frullania dilatata*, and included in it two species, *Porella platyphylla* and *Lepidolaena clavigera*, belonging to different families. In this paper the writer wishes to discuss on the phylogenetic evaluation of the patterns of Frullania-type and Lopholejeunea-type, from the studies on *Brachiolejeunea sandvicensis* and *Frullania hamatiloba*.

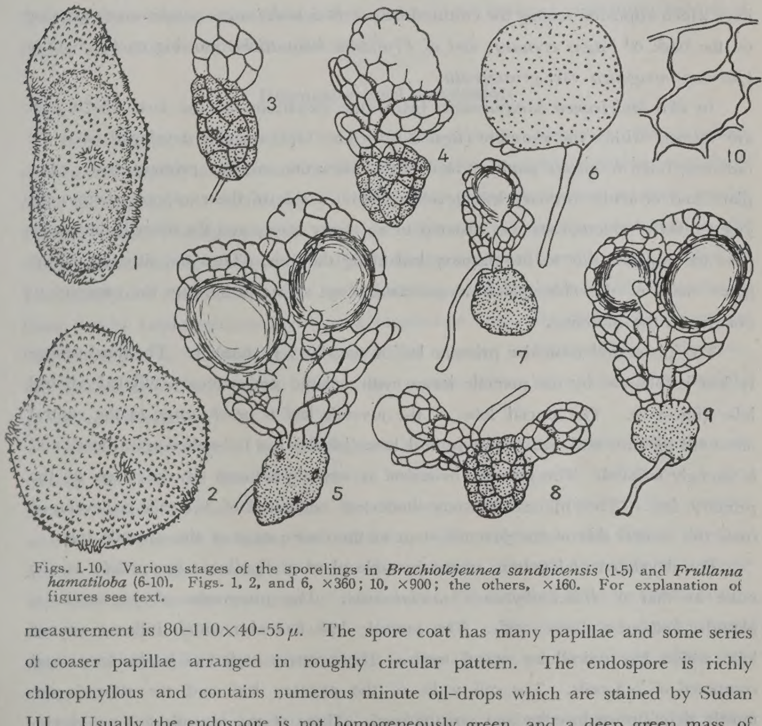
In July of 1956 the writer collected some materials of *Brachiolejeunea sandvicensis* and *Frullania hamatiloba* in the Chichibu Mountains, Saitama Pref. They have fully developed perianths which embeded young sporophytes. These materials were culture for about a month before maturity of the sporophytes. Some matured sporophytes were cut off and transferred on a sheet of purified paper. Capsules expanded in a few hours and spores were scattered. The spores were sown on Knop's agar on the same day.

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** (I) and (II) of the series were published in Journ. Hattori Bot. Lab. **17**: 55-58 (1956) and **18**: 102-105 (1957).

Germination

Spores in a matured capsule of *Brachiolejeunea sandvicensis* are usually in 2-4 celled stage of development, but some of them still remain in unicellular stage (fig. 1-2). Spores in this stage are very much irregular both in form and size. The measurement is 80-110×40-55 μ. The spore coat has many papillae and some series of coaser papillae arranged in roughly circular pattern. The endospore is richly chlorophyllous and contains numerous minute oil-drops which are stained by Sudan III. Usually the endospore is not homogeneously green, and a deep green mass of chloroplasts is situated at one side of the endospore. This feature of the spore, however, is seen generally in uni- or bicellular stage. But in a further developed stage, it becomes homogeneously deep green. The first wall is formed at right angles to the long axis.



Figs. 1-10. Various stages of the sporelings in *Brachiolejeunea sandvicensis* (1-5) and *Frullania hamatiloba* (6-10). Figs. 1, 2, and 6, ×360; 10, ×900; the others, ×160. For explanation of figures see text.

In *Frullania hamatiloba* the spores have minutely and uniformly punctated coat. Before the expansion of the spore coat about 30 or a little more cells are formed

within the exospore. In this case the measurement of the spore is approximately 70 μ. Many oil-drops and chloroplasts are contained in the exospore. But in a more earier stage of development the green-mass of the chlorophasts as seen in *Brachiolejeunea sandovicensis* was not observed.

The following developmental patterns of both species were observed in the sporelings which appeared among the cultured mat of *Brachiolejeunea sandvicensis* growing on the bark of *Fagus crenata*, and of *Frullania hamatiloba* gsowing on the bark of *Quercus mongolica* var. *grosserrata*.

In *Brachiolejeunea sandvicensis*, before the expansion of the coat 15-20 cells are formed within the exospore (figs. 3-4). The 1-(2) rhizoids developed from the radiating ridge of coaser papillae before the liberation of the primary leaf. The plane and orbicular primary leaf developed from a side of the exospore whereto the green mass of chloroplasts was situated in an earier stage, and the rhizoids developed from the opposste side to the primary leaf along the axis. Thus the situation of the green mass of the chloropalsts in an earier stage seems to indicate the presence of polarity in the sporeling.

The plane and orbicular primary leaf is usually 3 in number. The third primary leaf is followed by the juvenile leaves with a large and strongly inflated ventral lobe (fig. 4-5). The dorsal lobe of the juvenile leaf is nearly same to the ventral one both in form and size. The ventral lobe (lobule) has 1-2-celled apical tooth and is strongly inflated. The primary underleaf is never produced at the stage of the primary leaf. The filiform primary underleaf composed of 3-4 cells is developed from the ventral side of the juvenile stem at the earier stage of the juvenile leaf.

The developmental pattern of the juvenile plant of *Frullania hamatiloba* is the same as that of *Brachiolejeunea sandvicensis*. The protonema of this species is globular without a distinct axis. The juvenile leaf has also much inflated ventral lobe which has unicellular apical tooth. The primary underleaf is also linear and composed of 2-3 cells. The cell walls of the primary leaf and the rhizoids are mostly right brown in color and not thickned. Those of the juvenile leaf are moderately thickened with distinct trigones as in the mature leaf (fig. 10). Occasionally two plants developed from a single protonema (fig. 8), but one of them may be more or less suppressed in growth.

In *Brachiolejeunea sandvicensis* a rather large number of oil-bodies (usually 30-35 per cell) are found in the cells of the primary leaf and stem. The oil-bodies are 1-2 in diameter, homogeneous, and never stained by Sudan III. Occasionally in

the basal cells of the primary leaf 2–3 large oil-drops were observed. The oil-bodies are nearly similar to those of adult plant but far smaller. The oil-bodies of the juvenile plant of *Frullania hamatiloba* are also very similar to those of adult plant except for their size.

Gemmae of *Brachiolejeunea sandvicensis* and *Frullania hamatiloba* are not found. The vegetative reproduction from leaves could not be obtained in culture, nor found among the mats of herborium specimens.

Discussion and conclusion

From the above observations it may be said that the pattern of the sporelings of *Brachiolejeunea sandvicensis* is similar to that of Lopholejeunea-type, and *Frullania hamatiloba* to Frullania-type. The former pattern is known in some species *Lopholejeunea*, *Mastigolejeunea*, and *Archilejeunea*. However, according to the writer's observations, the pattern of *Frullania hamatiloba* is much allied to that of Brachiolejeunea sandvicensis. M. Fulford distinguished the patterns of Frullania-type from that of Lopholejeunea-type by the number of the cells within the exospore; four to dozen in Lopholejeunea-type and 50 or more in Frullania-type. However, the number of the cells within the exospore seems not to be estimated so essential as she considered.

At the earier stage of the development of *Brachiolejeunea sandvicensis*, the spore usually elongates and also the protonema more or less elongates and shows a oval form in outline. Thus, throughout the development of the protonema, the presence of the developmental axis may be indicated. The protonema with distinct developmental axis is usual throughout for the Lejeuneaceae, at least according to the present knowledge on the sporelings of this family. On the other hand, in Frullania-type the protonema is globular and has no distinct axis. The abnormal developmental pattern of *Frullania hamatiloba* shown in fig. 10 may be an example which indicates this fact.

The developmental pattern of the juvenile plant of Lopholejeunea-type is almost the same to that of Frullania-type. The number of the cells within the exopsore of Frullania is smaller than M. Fulford's consideration. From the above discussion the difference between the pattern of Lopholejeunea-type and that of Frullania-type may lie in the protonema form.

R. M. Schuster (1955) discussed the close relationship of the Lejeuneaceae to the Frullaniaceae from the morphological studies of the sporophytes. This is also

admitted from the sporeling patterns in both families. Among the Lejeuneaceae, the subfamily Holostipae, to which all genera of the Lopholejeunea-type belong, is considered as the most primitive group by R. M. Schuster. Separately from this opinion, the writer thinks that the Holostipae has particular affinity to the Frullaniaceae from the sporeling pattern, especially by the almost similar developmental pattern of the juvenile plant.

Summary

Sporeling patterns of *Brachiolejeunea sandvicensis* and *Frullania hamatiloba* are discussed; the former species is followed to Lopholejeunea-type and the latter to Frullania-type. The essential difference between both patterns lies in the protonema form; oval one with a distinct developmental axis in Lopholejeunea-type and globular one without axis in Frullania-type. The former type of the protonema is usual for the Lejeuneaceae. From the similar pattern of the development of the juvenile plant in Frullania- and Lophonelejunea-type, the closest relationship of the Holostipae of the Lejeuneaceae to the Frullaniaceae is indicated.

The writer should like to express his cordial thanks to Prof. H. Ito of our University and Dr. S. Hattori of the Hattori Botanial Laboratory for their kind and useful advices.

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M. Fulford. Bull. Torrey Bot. Club **69**: 627-633 (1942). —— Bryol. **45**: 173-175 (1942). —— Bull. Torrey Bot. Club **71**: 639-654 (1944). —— Bryol. **50**: 97-112 (1947). —— Rev. Bryol. Lich. **18**: 14-18 (1950). —— VIII Congr. Intern. Bot. Rapp. et Comm. Sect. **16**: 55-64 (1954). R. M. Schuster. Journ. Elisha Mitchell Sci. Soc. **7**: 106-126 (1955).

クサリゴケ科 (Lejeuneaceae) の胞子発芽は主として M. Fulford によつて研究され，六つの型に分けられた．このうち Lopholejeunea 型はヤスデゴケ科 (Frullaniaceae) およびその他の二つの異なる科にみられる Frullania 型から，胞子内で形成された原糸体を構成する細胞の数が，前者では 50 以上，後者では 12 以下であることによつて区別された．今回筆者はチヂレウロコゴケ (*Brachiolejeunea sandvicensis*) およびカギソルラニゴケ (*Frullania hamatiloba*) の 2 種類で研究した結果，前者は Lopholejeunea 型に，後者は Frullania 型であることが明かとなつた．しかし M. Fulford が考えた如く原糸体の細胞数がこの二つの型を分ける基本的なものでないことが明かとなつた．すなわち Lopholejeunea 型では原糸体は明かな長軸を有し，従つて原糸体の外形は楕円

状になるが，Frullania 型ではこのような軸は認められなく，原糸体は球状となる。このような原糸体の形の相異はヤスデゴケ科およびクサリゴケ科の全体的な相異ともなる。従つてこの二つの発芽形の相異は原糸体の形の相異（または明かな発芽軸があるかないか）にあると考えられる。

原糸体からの幼植物の発達過程は二つの型で全く同様である。このことからクサリゴケ科の中でも Holostipae 亜科 (Lopholejeunea 型のものはすべてこの亜科に属する）とヤスデゴケ科の近縁関係が証明されると考えられる。

○ヌカボガエリについて（檜山庫三） Kōzō HIYAMA: On *Polypogon hondoensis* Ohwi

大井次三郎博士も既に云われているようにヌカボガエリ (*Polypogon hondoensis* Ohwi) はヒエガエリとコヌカグサとの間に出来た自然雑種に違いないと思える。これまで，この植物は本州の青森・富山・長野の 3 県で発見されていたが，今度（1957 年 4 月 14 日）群馬県前橋市の岩神河原で戸部正久氏が採集された。戸部氏の標本では lemma に明かな芒があつて，その長さは小穂より僅に超出するか少し短い。しかし，lemma に芒の出る出ないはこの場合は多分雑種性のしからしむるところであろうから，この点問題はないと思う。雑種では個体によつて両親のどちらかの形質がより強く現われることがあるが，前橋産のものはコヌカグサの形質の方が一層強く現われており，その片親のコヌカグサとハイコヌカグサに近い型のものだつたように想われる。また包穎の背は多かれ少かれ稜をなしていて，その側面には一面に微細な刺状突起のあるのがルーペで見られる。

×**Agropogon hondoensis** (Ohwi) Hiyama, comb. nov.

Polypogon hondoensis Ohwi in Bot. Mag. Tokyo **55**: 357 (1941).

Agrostis palustris Huds. × *Polypogon fugax* Steud.

Distr. Hondo: Mutsu, Ettyu, Shinano et Kodzuke.

○イモネラン九州に産す（久内清孝） Kiyotaka HISAUCHI: *Eulophia ochobiensis* Hayata has been collected in Kyushu.

イモネランが九州に産することについては，現地の人達には，わかつているかも知れないが，流布されている文献や，東京大学，科学博物館の収蔵標本では証明できない。ところが，千葉大学教授荻庭丈寿氏は昨年 7 月，これを宮崎県辺塚の叢中で得られた。鑑定は私がしたので，更にラン科の専門家を煩す必要があるが Eulophia 属であることはたしかである。東京には早田博士のタイプの外，西南諸島からの標本はかなりあるので，それ等と比較するとイモネランということになる。そうして，津山氏が小笠原でかかれたイモランとは少し異るようであるが，私はまた比較解剖をしていない。

Takashi MATSUSHIMA, Hiroshi ITŌ, and Mineko IKEDA*:

Investigation on the fungal spoilage of crude drugs (2)**

松島 崇: 伊東 宏: 池田峰子*:

絲状菌による生薬の変質に関する研究 (2)

Shakuyaku, PAEONIA (J.P.VI)***, root of *Paeonia albiflora* Pallas var. *trichocarpa* Bunge (Ranunclaceae) and its allied plants.

R. H. 75% : In 28 days, a trace of the fungal growth was observed.

Growing species: *Aspergillus mangini* (Mangin) Thom and Raper.

R. H. 84% : In 7 days, a slight development of *Aspergillus glaucus* group was observed. The growth in 28 days was relatively good.

Dominant species: *Aspergillus ruber*, *Aspergillus mangini* (Mangin) Thom and Raper.

R. H. 100% : A fungal growth was observed in 3 days. Until about 10 days, *Aspergillus glaucus* group was predominant, but later *Penicillium frequentans*, *Peniicllium implicatum* and subsequently *Penicillium variabile* developed. In 21 days, *Penicillium variabile* dominated over other fungi. The fungal development in 28 days was very good.

Dominant species: *Penicillium variabile* Sopp.

Subdominant species: *Aspergillus ruber*, *Aspergillus umbrosus* Bain and Sart. *Aspergillus mangini* (Mangin) Thom and Raper.

Minor species: *Penicillium frequentans* Westling, *Penicillium implicatum* Biourge.

Very minor species: *Aspergillus niger* van Tieghem. Unidentified fungus (yellow mycelia), *Rhizopus nigricans* Ehrenberg, *Aspergillus ochraceus* Wilhelm.

Kikyô, PLATYCODON (J.P. VI) root of *Platycodon grandiflorum* A. De Candole (Campanulaceae).

R. H. 75% : In 17 days, a fungal growth was observed. In 28 days, the fungal development was poor.

Growing species: *Aspergillus ruber*.

R. H. 84% : In 7 days, the growth of *Aspergillus glaucus* group became visible. The fungal development in 28 days was relatively good.

* Contribution from Division of Medical Plant Garden, National Hygenic Laboratory, Setagaya, Tokyo. 国立衛生試験所薬用植物部

** Part 1 was published in Journ. Jap. Bot. **32**: 201-207 (July 1957).

*** Japanese Pharmacopea Ed. VI.

Dominant species: *Aspergillus ruber*.

Minor species: *Aspergillus repens*.

R. H. 100%: The fungal growth was observed in 2 days. Until 7 days, *Aspergillus glaucus* group was predominant, later *Penicillium frequentans* and subsequently *Penicillium purprogenum* and *Penicillium duclauxi* developed rapidly. In 14 days, *Penicillium* spp. dominated over other fungi. The fungal growth in 28 days was very good.

Dominant species: *Penicillium purprogenum* Stoll, *Penicillium frequentans* Westling, *Penicillium duclauxi* Delacoiux.

Subdominant species: *Aspergillus ustus* (Bain.) Thom and Church.

Minor species: *Aspergillus ruber*, *Aspergillus repens*, *Aspergillus sulphureus* Fresenius, *Rhizopus nigricans* Ehrenberg, *Aspergillus candidus* Link, *Aspergillus niger* van Tieghem, *Trichothecium roseum* Link, *Aspergillus fumicola* Chad. and Sach.

Obaku, PHELLODENDRON (J.P.VI), cortex of *Phellodendron amurense* Ruprecht (Rutaceae) and its allied plants.

R. H. 75%: No fungal development in 28 days.

R. H. 94%: In 3 days, the development of *Aspergillus ruber* was observed. The growth in 28 days was very poor.

Growing species: *Aspergillus ruber*.

R. H. 100%: In 2 days, *Aspergillus repens* began to develop and predominated until about 10 days. Later *Aspergillus awamori* developed. The fungal growth in 28 days was fairly good.

Dominant species. *Aspergillus repens*, *Aspergillus awamori* Nakazawa.

Very minor species: *Aspergillus sclerotiorum* Huber, *Rhizopus nigricans* Ehrenberg, *Penicillium* sp. (Asymmetrica).

Kakkon, PUERARIA (J. P. VI) root of *Pueraria hirsuta* Matsumura (Leguminosae)

R. H. 75%: In 21 days, *Aspergillus restrictus* began to develop. The growth in 28 days was very poor.

Growing species: *Aspergillus restrictus* G. Smith

R. H. 84%: In 5 days, *Aspergillus glaucus* group began to develop. The growth in 28 days was very good.

Dominant species: *Aspergillus repens*, *Aspergillus ruber*, *Aspergillus restrictus* G. Smith.

Very minor species: white mycelia (*Monilia* sp. ?)

R. H. 100%: In 2 days, *Aspergillus ruber* began to develop. Retarding 2 days, *Aspergillus awamori* appeared. The growth in 28 days was very good.

Dominant species: *Aspergillus ruber*.

Subdominant species: *Aspergillus awamori* Nakazawa.

Very minor species: *Aspergillus ochraceus* Wilhelm.

Chôji, CARYOPHYLLUS (J. P. VI), flower bud of *Eugenia caryophylla* Thunberg (Myrtaceae).

R. H. 75%: No fungal development in 28 days.

R. H. 84%: No fungal development in 28 days.

R. H. 100%: No fungal development in 28 dgys.

Sanshô, ZANTHOXYLUM (J. P. VI), fruit of *Zanthoxylum piperitum* De Candolle (Rutaceae) and its allied plants.

R. H. 75%: No fungal development in 28 days.

R. H. 84%: In 7 days, *Aepergillus mangini* began to develop. The growth in 28 days was very poor.

Growing species: *Aspergillus mangini* (Mangin) Thom and Raper.

R. H. 100%: Until about 10 days, only *Aspergillus repens* was growing. In 14 days *Aspergillus versicolor* and subsequently *Penicillium implicatum* became significant and grew rapidly. The growth in 28 days was fairly good.

Dominant species: *Aspergillus versicolor* (Vuill.) Tiraboschi.

Subdominant species: *Penicillium implicatum* Biourge, *Aspergillus repens*.

Minor species: *Aspergillus ochraceus* Wilhelm, *Aspergillus miyakoensis* Nak., Simo. & Wat., *Trichothecium roseum* Link.

Very minor species: *Memnoniella echinata* (Rivolta) Galloway, *Fusarium* sp., *Chaetomium globosum* Kunze.

Shôkyô, ZINGIBER (J. P. VI), subterranean stem of *Zingiber officinale* (Zingiberaceae).

R. H. 75%: No fungal development in 28 days.

R. H. 84%: Until about 25 days, no fungal development was observed, but later *Fumicola* sp. developed very poorly.

Growing species: *Fumicola* sp.

R. H. 100%: In 5 days, *Penicillium frequentans* began to develop. Retarding 2 days, *Aspergillus flavus* developed. The fungal growth after 28 days was good.

Dominant species: *Penicillium frequentans* Westling.

Subdominant species: *Aspergillus flavus* Link.

Minor species: *Penicillium wortmanni* Klöcker.

Very minor species: *Aspergillus ruber*.

Tônin, PERSICA (N. F. J. II),*** seed of *Prunus persica* Batsch (Rosaceae) and its allied plants.

R. H. 75%: No fungal development in 28 days.

R. H. 84%: In 10 days, *Aspergillus umbrosus* began to develop and its growth in 28 days was very poor.

Growing species: *Asergillus umbrosus* Bainier and Sartory.

R. H. 100%: In 4 days, *Rhizopus nigricans* began to develop. In 14 days, *Trichoderma viride* began to develop. The fungal growth in 28 days was very good.

Dominant species: *Rhizopus nigricans* Ehrenberg.

Subdominant species: *Trichoderma viride* Pers. ex Fr. (growing on the substrate and *Rhizopus nigricans*).

Minor species: *Aspergillus ochraceus* Wilhelm.

Very minor species: *Aspergillus tamarii* Kita, *Aspergillus ruber*.

Bukuryô, HOELEN (N. F. J. II), large sclerotium of *Poria* spp. in pine root.

R. H. 75%: No fungal development in 28 days.

R. H. 84%: No fungal development in 28 days.

R. H. 100%: In 6 days, a fungal growth was observed, but its growth was quite retarded. The fungal growth in 28 days was poor.

Dominant species: *Penicillium purpurogenum* Stoll.

Minor species: *Penicillium rugulosum* Thom, *Aspergillus luchuensis* Inui.

Kanokosô, VALERIANA (J. P. VI), subterranean stem and root of *Valeriana officinalis* Linné var. *latifolia* Miquel (Valerianaceae).

R. H. 75%: In about 20 days, the growth of *Torula sacchari* and *Aspergillus restrictus* began to develop. The growth in 28 days was very poor.

Growing species: *Torula sacchari* Corda, *Aspergillus restrictus* G. Smith.

R. H. 84%: In 3 days, *Torula sacchari* began to develope and predominated hereafter. In about 10 days, *Aspergillus glaucus* group began to appear. The fungal development in 28 days was poor.

Dominant species: *Torula sacchari* Corda.

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Suadominant species: *Aspergillus restrictus* G. Smith, *Aspergillus ruber.*

Minor species: *Fumicola grisea* Traaen.

Very minor species: *Scopulariopsis brevicaulis* var. *glabrum* Thom.

Okera, Atractylodes (J. P. VI.), subterranean stem of *Atractylodes japonica* Koidzumi (Compositae).

R. R. 75%: In 28 days, the fungal growth was very poor.

Growing species: *Aspergillus ruber*, *Aspergillus ruber* NHL 5078 (This fungus produced white, silky floccose colonies on this substrate).

R. H. 84%: In 10 days, only *Aspergillus ruber* NHL 5078 was growing very poorly and later *Aspergillus glaucus* group began to develop. The growth in 28 days was poor.

Dominant species: *Aspergillus ruber* NHL 5078.

Minor species: *Aspergillus restrictus* G. Smith, *Aspergillus ruber*, *Apspergillus amstelodami.*

Very minor species: *Penicillium cyclopium* Westling.

R. H. 100%: In 4 days, *Aspergillus ruber* NHL 5078 began to develop and dominated hereafter. In about 10 to 14 days, *Aspergillus ustus* and *Aspergillus niger* began to develop. The fungal growth in 28 days was very good. The good growth of *Aspergillus ruber* NHL 5078 and *Aspergillus ustus* gave a conspicuous appearence.

Dominant species: *Aspergillus ruber* NHL 5078.

Subdominant species: *Aspegillus ustus* (Bainier) Thom and Church.

Minor species: *Aspergillus niger* van Tieghem, *Penicillium cyclopium* Westling.

Very minor species: *Aspergillus sulphureus* (Fres.) Thom and Church, *Aspergillus versicolor* (Yuill.) Tiraboschi, *Aspergillus oryzae* (Ahlb.) Cohn, *Aspergil'us ruber*, *Aspergillus repens*, *Aspergillus amstelodami.*

Kyônin, ARMENIACA (J. P. VI.), seed of *Prunus armeniaca* Linné var. *anzu* Maximowicz (Rosaceae).

R. H. 75%: In 28 days, no fungal growth was observed.

R. H. 84%: In 7 days, *Aspergillus repens* began to develop and predominated until about 21 days. Later *Penicillium viridicatum* began to develop. The fungal growth in 28 days was very poor.

Growing species: *Aspergillus repens*, *Penicillium viridicatum* Westling.

R. H. 100%: In 2 days, *Rhizopus nigricans* began to develop. In 8 days, *Aspergillus melleus*, which began to develop in 4 days, dominated over *Rhizopus*

nigricans. Later *Penicillium variabile* and *Penicillium viridicatum* began to grow. The growth in 28 days was very good.

Dominant species: *Aspergillus melleus* Yukawa.

Subdominant species: *Penicillium variabile* Sopp. *Penicillium viridicatum* Westling.

Minor species: *Rhizopus nigricans* Ehrenberg, *Aspergillus versicolor* (Yuill.) Tirtaboschi

Kamitsure, CHAMOMILLA (J. P. VI), flower of *Matricaria chamomilla* Linné (Compositae).

R. H. 75%: No fungal growth in 28 days.

R. H. 84%: In 10 days, *Aspergillus restrictus* began to develop. The geowth in 28 days was poor.

Growing species: *Aspergillus restrictus* G. Smith.

R. H. 100%; *Asgergillus repens*, *Aspergillus ochraceus*, and *Rhizopus nigricans* began to develop in 4, 6, and 10 days, respectively. *Rhizopus nigricans* predominated over other fungi in 14 days. In 28 days, the fungal development was good.

Dominant species: *Rhizopus nigricans* Ehrenberg.

Subdominant species: *Aspergillus ochraceus* Wilhelm.

Minor species: *Aspergillus repens*, *Aspergillus luchuensis* Inui.

Very minor species: *Aspergillus oryzae* (Ahlb.) Cohn, *Aspergillus versicolor* (Yuill.) Tiraboschi.

Tôhimatsu, AURANTII PERICARPIUM PULVERATUM (J. P. VI.), pericarp of *Citrus aurantium* Linné subsp. *amara* Engler (Rutaceae).

R. H. 75%: No fungal growth in 28 days.

R. H. 84%: No fungal growth in 28 days.

R. H. 100%: In 6 days, *Aspergillus awamori* began to develop and later dominated. In 8 to 11 days *Penicillium purpurogenum* and *Penicillium implicatum* began to appear. The fungal growth in 28 days was very good.

Dominant species: *Aspergillus awamori* Nakazawa.

Subdominant species: *Penicillium purpurogenum* Stoll, *Penicillium implicatum* Biourge.

Minor species: *Aspergillus versicolor* (Vuill.) Tiraboschi.

Nihonkeihi, CINNAMOMUM LOUREIRII (J. P. VI.), cortex of *Cinnamomum loureirii* Nees (Lauraceae).

R. H. 75%: No fungal development in 28 days.

R. H. 84%: In 19 days, *Aspergillus repens* began to develop. The growth was very poor in 28 days.

Growing species: *Aspergillus repens*.

R. H. 100%: In 4 days, *Aspergillus repens* began to develop. In 20 days, *Penicillium variabile* began to grow. The growth in 28 days was good.

Dominant species: *Aspergillus repeds*.

Subdominant species: *Penicillium variabile* Sopp.

Minor species: *Aspergillus versicolor* (Vuill.) Tiraboschi.

Senkyû, CNIDIUM (N. F. J. II), subterranean stem of *Cnidium officinale* Makino (Umbelliferae).

R. H. 75%: In 12 days, *Aspergillus ruber* and *Torula sacchari* began to develop. The growth was poor in 28 days.

Growing species: *Aspergillus ruber, Torula sacchari* Corda.

R. H. 84%: In about 5 days, *Aspegillus mangini*, *Torula sacchari*, and *Aspergillus versicolor* began to develop. The growth in 28 days was good.

Dominant species: *Aspergillus mangini* (Mangin) Thom and Raper.

Subdominant species: *Aspergillus versicolor* (Yuill.) Tiraboschi.

Minor species: *Torula sacchari* Corda.

R. H. 100%: In one day, *Aspergillus repens* began to develop. *Rhizopus nigricans*, *Aspergillus sclerotiorum* began to develop in about 5 days and the former dominated over other fungi soon. In 10 days, *Penicillium roqueforti* began to develop under *Rhizopus nigricans*. The growth in 28 days was very good.

Dominant species: *Rhizopus nigricans* Ehrenberg, *Aspergillus sclerotiorum* Huber.

Minor species: *Aspergillus repens, Penicillium roqueforti* Thom, *Aspergillus niger* van Tieghem.

Saishin, Asiasari Radix, subterranean stem and root of *Asiasarum sieboldi* F. Maekawa (Aristolochiaceae).

R. H. 75%: In 18 days, *Aspergillus mangini* began to develop. The growth in 28 days was poor.

Growing species: *Aspergillus mangini* (Mangin) Thom and Raper.

R. H. 84%: In 7 days, *Aspergillus glaucus* gruop begin to develop. The growth in 28 days was poor.

Growing species: *Aspergillus mangini* (Mangin) Thom and Raper, *Aspergillus*

repens.

R. H. 100%: In 4 days, *Rhizopus nigricans*, *Aspergillus repens*, and *Aspergillus sclerotiorum* began to develop. *Rhizopus nigricans* dominated over other fungi in 7 days. The growth in 28 days was very good.

Dominant species: *Rhizopus nigricans* Ehrenberg.

Minor species: *Aspergillus repens*, *Aspergillus sclerotiorum* Huber, *Aspergillus terreus* Thom, *Aspergillus oryzae* (Ahlb.) Cohn, *Aspergillus niger* van Tieghem, *Memnoniellua echnate* (Rivolta) Galloway.

Very minor species: *Scopulariopsis brevicaulis* var. *glabrum* Thom.

Kijitsu, AURANTII IMMATRI FRUCTUS (N. F. J. II), immature fruit of *Citrus aurantium* Linné subsp. *amara* Engler, *C. aurantium* Linné subsp. *natsudaidai* Hayata, *C. aurantium* Linné subsp. *nobilis* Makino (Rutaceae) or tneir allied plants.

R. H. 75%: No fungal growth was observed in 28 days.

R. H. 84%: In 7 days, *Aspergillus ruber* began to develop. The growth in 28 days was poor.

Growing species: *Aspergillus ruber*.

R. H. 100%: In 1 day, *Aspergillus ruber* began to develop and dominated until about 7 day. Later *Aspergillus awamori* and *Aspergillui oryzae* developed rapidly. The growth in 28 days was very good.

Dominant species: *Aspergillgs awamori* Nakazàwa.

Subdominant species: *Aspergillus sclerotiorum* Huber, *Aspergillus oryzae* (Ahlb.) Cohn, *Aspergillus ruber*, *Penicillium variabile* Sopp.

Tôki, LIGUSTICUM (N. F. J. II), root of *Ligusticum acutilobum* Siebold et Zuccarini (Umbelliferae).

R. H. 75%: In 28 days, no fungal development was observed.

R. H. 84%: In 12 days, *Aspergillus mangini* began to develop. The growth in 28 days was very poor.

Growing species: *Aspergillus mangini* (Mangin) Thom and Raper.

R. H. 100%: In 7 to 10 days, *Aspergillus mangini*, *Aspergillus oryzae*. and *Penicillium citrinum* began to develop. The growth in 28 days was poor.

Dominant soecies: *Aspergillus oryzae* (Ahlb.) Cohn.

Subdominant species: *Aspergillus mangini* (Mangin) Thom and Raper, *Aspergillus elegans* Gasperini, *Aspergillus niger* van Tieghem.

Minor species: *Penicillium citrinum* Thom.

Shukusha, AMOMUM XANTHIOIDES (N. F. J. II), seed of *Amomum xanthioides* Wallich (Zingiberaceae).

R. H. 75%: No fungal growth was observed in 28 days.

R. H. 84%: No fungal growth was observed in 28 days.

R. H. 100%: In 8 to 10 days, *Aspergillus ruber*, other *Aspergillus* spp., and *Rhizopus nigricans* began to develop. Until 20 days, *Aspergillus ruber* was predominant, but later *Aspergillus humicola* dominated. The growth in 28 days was poor.

Dominant species: *Aspergillus humicola* Chaudhuri and Sachar.

Minor species: *Aspergillus ruber*, *Aspergillus oryzae* (Ahlb.) Cohn, *Aspergillus niger* van Tieghem, *Aspergillus melleus* Yukawa, *Rhizopus nigricans* Ehreberg.

Kôbushi,' CYPERUS (N. F. J. II), Subterranean stem of *Cyperus rotundus* Linné (Cyperaceae).

R. H. 75%: No fungal development in 28 days.

R. H. 84%: In 7 days, *Aspergillus mangini* appeared. The growth in 28 days was very poor.

Growing species: *Aspergillus mangini* (Mangini) Tnom and Raper.

R. H. 100%: Until 14 days, *Aspergillus umbrosus* which appeared in 3 days predominated. Later *Penicillium frequentans* appeared and developed rapidly. The growth in 28 days was good.

Dominant species: *Penicillium frequentans* Westling.

Minor species: *Aspergillus umbrosus* Bain. and Sart., *Aspergillus awamori* Nakazawa, *Aspergillus flavus* Link, *Aspergillus sclertiorum* Huber.

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*** National Formulary of Japan Ed. II.

Discussion and conclusion

Summarizing up the fungal spoilage of 30 kinds of crude drugs in different conditions, it is said that the most important factor to determine the spoilage type is relative humidity with which the crude drug is in equilibrium. Some of the ingredients of crude drugs are known to have the inhibitory effect upon the growth of bacteria and fungi.[1] Such crude drug as Chōji could not permit the growth of fungi at R. H. 100% in 28 days. The inhibitory effect of the ingredients may be not manifested in some cases because of the relatively low concentrations in the crude drugs. Another factor which may contribute to the protection of fungal spoilage may be

sanitation that reduce the amount and kinds of fungal infection in the preparation and storage. Intrinsically, it is difficult to ask such a countermeasure in the commercial production of crude drugs.

The relative humidity which is most influential to the fungal development is expressed, in other words, as equilibrium relative humidity (e. r. h.) of the system.[2] Equilibrium relative humidity is evidently related to a factor which has a profound influence in the selection of the particular association of fungi appearing on a crude

Table 1. Relation between minimum e. r. h. and spoilage fungi

minimum e. r. h.	fungi which may appear on crude drugs	group of fungi based on their moisture requirement[3]
70% or below	no fungal development	
70%-75%	*Aspergillus glaucus*	xerophylic fungi
	Torula sacchari (*Catenularia fuliginea*)	
80%-90%	*Aspergillus* spp.	mesophylic fungi
	some spp. of *Penicillium* (mainly belonging to Biverticillata-Symmetrica)	
	Penicillium frequentans	
	Penicillium cyclopium	
over 90%	many spp. of *Penicillium*	hydrophylic fungi
	Scopulariopsis brevicaulis	
	Trichothecium roseum	
	Trichoderma viride	
	many spp. of Mucorales	

drug. The lowest values of the e. r. h. permitting the development of the spoilage fungi are listed in table 1. From this table, it is found out that *an equilibrium relative humidity of 70% gives reasonable protection against fungal development on crude drugs*, and 'alarm water content', i. e., the highest water content at which fungal growth will not occur, corresponding to this value may be calculated from water sorption isotherms.

Another phenomenon observed in the fungal development on crude drugs is the 'successive appearance of fungi'. The factors influencing this phenomenon may be the gradual absorption of water by the substrate, difference of growth rate of fungi, antagonism, symbiosis, synergism, or combinations of these.

The establishment of one fungus on a substrate may influence in some ways, for

example, the production of metabolic water which may disturb the local e. r. h. sufficiently to make it critical or changing the substrate nutritionally in favour of the establishment of other successing fungi. More detailed investigations will be necessary to clarify this complicated situation.

Another interesting problem is the effect of spoilage fungi, or the fungal enzymes on the ingredients of crude drugs. Further investigation will be carried on this problem in future.

The authors wish to express their appreciation to Mr. K. Tsubaki, Nagao Institute, for valuable advices and to Mr. M. Asano, Takashimadō Pharmacy, for supplying the samples.

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Errata of part 1 of this series (vol. 32 No. 7. 1957)

page	line	for	read
202	9	KCl and NaCl	NaCl and KCl
204, 205		*Torula saccharii*	*Torula sacchari* Corda

○クロミウスノキとは何か?（水島正美） Masami MIZUSHIMA: On the status of *Vaccinium hirtum* var. *atrum* Koidz.

小泉博士はウスノキに比べて花数多く，葉裏中肋に白密毛を布き，果実が黒熟するものとして，クロミウスノキと云うものを 1915 年に記載された．これは羽前東置賜（ヒガシオキタマ）郡和田村で自身採集された標本に基いている．中井博士はこれをアオバウスノキ，即ち関東地方以西の低山地産のウスノキ（*Vacc. versicolor* Nak. var. *glabrum* Hara の形）と同一物と見なされ（大日本樹木誌，改訂版，1927 年），原博士はオオバスノキの変種に移され（種子植物集覧 第 1 冊，1949 年），大井博士も同様にオオバスノキの変種と見られたがウスノキもヤナギバスノキも全部同物として扱われた（日本植物誌，1953 年）．

まず以上がクロミウスノキの扱いの様相となるが，実際に小泉博士の基準標本（初めタイプの指定をされていないが，1 枚しかないので自動的にそれが基準標本になる）を検すると，筆者は何れの扱いにも左袒しかねるのである。と云うのは，原博士も以前語られたのではあるが，オオバスノキとウスノキとの中間形を呈しているからである。即ち葉は特に裏面の中肋に沿つて殆ど開出した白毛を密生するが，同時に中肋上にも多く生じ，前者は裏日本に於けるウスノキの性質と見られ，後者はオオバスノキの性質と見られる。その上多少細くて前屈気味のある毛の状態は正に両種の中間である。果実の形状は熟したものでは潰れて確とは判じ難いが，黒紫色で少し白粉を被り，花托はウスノキよりも狭いがオオバスノキよりは広い。ここで注意すべき点は下方の小枝に若い果実1 個を着けていることとで，これは乾固してこそいるが萼筒に稜角が浮き出ており，萼裂片は広卵状三角形で鈍頭に近い。即ち筒部の形質はウスノキのものであり，裂片に於てはオオバスノキの扁円味とウスノキの尖り気味とを併有するものと判断出来る。

以上記した諸形質を合して，小泉博士が命名された最初の意味でのクロミウスノキ（ウスノキに似るも果実黒熟）と云うものは，オオバスノキと裏日本形のウスノキとの自然雑種であり，広義のヤナギバスノキと同一であると筆者は結論したい，ここに裏日本形ウスノキと称するものは，表日本中部のウスノキに比較して一般に葉に円味が多く（換言すれば巾広く），毛も多く，少くとも北陸地方，中部，関東，東北地方の裏日本気候帯地域，北海道西南部に分布し，ウスノキの地方形を成すと考えられるものを指す，然しウスノキは全体として多形的であるから明確に区切ることは困難である。尚ヤナギバスノキに関しては稿を改めて論じたい。

上述の諸点を学名に要約すれば次の如くである。

Vaccinium ×nikkoense Nakai in Bot. Mag. Tokyo **34**: (325) (1920)—Hara, Enum. Spermatoph. Jap. **1**: 65 (June 1949)—sensu emend. (fortasse *V. Smallii* × *V. Usunoki*)

V. angustifolium (non Aiton, nec Bentham) Komatsu in Matsum., Ic. Pl. Koisik. **2**: 13, Pl. 91 (1914).

V. hirtum Thunb. var. *atrum* Koidz. in Bot. Mag. Tokyo **29**: 310 (1915).

'*V. versicolor* (Koidz.) Nakai': Nakai, Tr. & Shr. Jap. ed. 2, **1**: 251, f. 119 (1927), p.p.

V. Smallii A. Gray var. *atrum* (Koidz.) Hara, op. cit. 67 (1949).

'*V. Smallii* var. *glabrum* Koidz.': Ohwi, Fl. Jap. 908 (1953), p.p.

（資源科学研究所）

○植物採集覚書（其十九）（奥山春季）　Shunki OKUYAMA: Tentative list of plants for collectors (19).

東　北　地　方（其 一）

○甲子温泉——旭岳（福島県）

原標本植物 *Sasa capillaris* Nakai アサヒザサ　植研 **10**:555 (1934), **15**: 337 (1939). *Sasa kasidensis* Nakai タカネザサ l. c. **11**: 601 (1935). *Disporum sessile* var. *dolichocarpum* Honda ナガミノホウチヤクソウ　植雑 **52**: 518 (1938).

植物〔羊〕シシガシラ，オサシダ，キヨタキシダ，オシダ，オオバシヨリマ，イツポンワラビ，ミヤマイタチシダ，ミヤマワラビ，オシヤグジデンダ，イワデンダ，シノブカグマ，フクロシダ，エゾイワデンダ。〔裸〕クロベ，アオモリトドマツ，ハイマツ，コメツガ，イチイ，アイズイヌガヤ。〔単〕ヒメノガリヤス，カリヤスモドキ，ミカズキグサ，コマツカサススキ，ギヨウジヤニンニク，ツバメオモト，クルマユリ，マイズルソウ，タケシマラン，タマガワホトトギス，コバイケイ，ウチワドコロ，アオスズラン，コイチヨウラン，ムカゴソウ，アリドオシラン，オノエラン，ハクサンチドリ，サギソウ，キソチドリ，オオヤマサギソウ。〔離〕ミヤマヤナギ，ミヤマハンノキ，ヤハズハンノキ，シラカンバ，ダケカンバ，ウダイカ，ンバミヤマタニソバ，オオヤマハコベ，ヤマグルマ，レンゲシヨウマ，ヤマオダマキ，ミヤマハンシヨウズル，バイカオウレン，ミツバオウレン，カラマツソウ，ミヤマカラマツ，シナノキンバイ，サンカヨウ，ルイヨウシヨウマ，ヒロハヘビノボラズ，タムシバ，タマアジサイ，クロクモソウ，バイカウツギ，ヤシヤビシヤク，オニシモツケ，ミヤマダイコンソウ，イワキンバイ，ミヤマザクラ，タカネイバラ，ゴヨウイチゴ，マルバシモツケ，コキンバイ，タチフウロ，ハクサンフウロ，ミヤマカタバミ，エゾユズリハ，ヒメモチ，アカミノイヌツゲ，クロズル，アサノハカエデ，カジカエデ，ヒトツバカエデ，メグスリノキ，コミネカエデ，クロカンバ，ナツツバキ，イワオトギリ，オオバキスミレ，スミレサイシン，イワテトウキ，ミヤマセンキユウ，シラネニンジン，イブキゼリ，ゴゼンタチバナ。〔合〕アクシバ，アオノツガザクラ，ムラサキヤシオ，ツツジ，アカヤシオ，シロヤシオ，トウゴクミツバツツジ，コメツツジ，シヤクナゲ，ハクサンシヤクナゲ，アブラツツジ，サラサドウダン，ミヤマホツツジ，ホツツジ，コケモモ，クロマメノキ，ベニイチヤクソウ，イワカガミ，ヒメイワカガミ，ユキワリソウ，ツマトリソウ，ハシドイ，オヤマリンドウ，カメバヒキオコシ，ミソガワソウ，ムシトリスミレ，オククルマムグラ，ミヤマムグラ，オオバソヨツバムグラ，オオキヌタソウ，キバナウツギ，ニシキウツギ，チチブヒヨウタンボク，コキンレイカ，ヒメシヤジン，ミヤマシヤジン，ノクシマシヤジン，エゾウサギギク，ヒトツバヨモギ，オオモミジガサ，タイミンガサモドキ，ナンブアザミ，ミヤマコウゾリナ，クルマバハグマ，フクオウソウ，コウリンカ，シラネアザミ，センダイトウヒレン。

○磐　梯　山（福島県）

原標本植物 *Carex Kinashii* Lév. et Vnt.〔テキリスゲの異名〕Bull. Soc. Fr. **51**: 204 (1904). *Veronica Schmidtiana* var. *bandaiana* Makino バンダイクワガタ 植雑 **24**: 103, fig. 9 (1910). *Euphrasia nummularia* Nakai マルバコゴメグサ Fedde, Rep. **12**: 34 (1912). *Astilbe congesta* var. *bandaica* Honda バンダイショウマ 植雑 **25**: 499 (1931). *Hypericum oliganthum* var. *typicum* forma *suberectum* Y. Kimura〔サソオトギリの一品〕植雑 **52**: 190 (1938).

植物〔羊〕ミヤマイヌワラビ，オオバショリマ，シラネワラビ，ミヤマワラビ，シノブカグマ，リョウメンシダ，アスヒカズラ，マンネンスギ。〔裸〕ハイマツ，イチイ，シラビソ，チャボガヤ。〔単〕タカネコウボウ，ヤマタヌキラン，テキリスゲ，オオカワズスゲ，クルマユリ，マイズルソウ，タマガワホトトギス，タカネアオヤギソウ，タカネトンボ（ミヤケラン），ハクサンチドリ。〔離〕ミヤマハンノキ，ネコシデ，ヒメイチゲ，ミツバオウレン，サンカヨウ，イワキンバイ，ミヤマキンバイ，タカネザクラ，ミヤマウラジロイチゴ，ゴヨウイチゴ，マルバシモツケ，ツルシキミ，ツルツゲ，カラコギカエデ，メグスリノキ，ミネカエデ，オガラバナ，ミヤマスミレ，エゾノタチツボスミレ，ヤナギラン，ヒメアカバナ，ケゴンアカバナ，ハリブキ，ミヤマセンキュウ，イブキゼリ，ゴゼンタチバナ。〔合〕イソウメ，アカモノ，シラタマノキ，ツガザクラ，ムラサキヤシオツツジ，オオバツツジ，シヤクナゲ，ハクサンシヤクナゲ，ミヤマホツツジ，クロウスゴ，クロマメノキ，コケモモ，ミヤマリンドウ，ハナイカリ，アケボノソウ，ジヤコウソウ，ミヤマクワガタ，オオバヒョウタンボク，キバナウツギ，ヒメシヤジン，ミヤマシヤジン，ヒトツバヨモギ，ヨブスマソウ，イワインチン，タチアザミ，オオノアザミ，ナンブアザミ，タカネニガナ，ヨツバヒヨドリバナ，ミヤマコウゾリナ，ウスユキソウ，ミヤマウスユキソウ，マルバダケブキ，カイタカラコウ，オヤリハグマ，クルマバハグマ，シラネアザミ。

○吾　妻　山（福島，山形県境）

原標本植物 *Asprella sibirica* var. *longearistata* Hack.〔アズマガヤ〕Bull. Herb. Boiss. **2-4**: 525 (1904). *Rhododendron brachycarpum* var. *Nemotoanum* Makino ネモトシヤクナゲ 植雑 **23**: 22 (1909). *Acer pictum* var. *glaucum* subvar. *latilobum* Koidz. ウラジロイトマキイタヤ Rev. Acer. Jap. 64 (1911). *Eriocaulon Takae* Koidz. アズマホシクサ 新撰植図 **1-6**: 157, pl. 79 (1913). *Molinia japonica* var. *rupestris* Koidz. コヌマガヤ 植雑 **29**: 312 (1915). *Senecio palmatus* var. *integrifolius* Koidz. ヒトツバハンゴンソウ l. c. **30**: 76 (1916). *Angelica Matsumurae* var. *glabra* Koidz. ケナシミヤマシシウド l. c. **31**: 136 (1917).

植物〔羊〕ナツノハナワラビ，コケシノブ，オサシダ，オオミヤマイヌワラビ，キヨタキシダ，シラネワラビ，オシダ，ミヤマワラビ，オオバショリマ，ホライシダ，カラ

クサイノデ，イワオモダカ，ヒメスギラン，ヤチスギラン，コスギラン，アスヒカズラ，タカネヒカゲノカズラ。〔裸〕シラベ，アオモリトドマツ，ハイマツ，ミヤマネズ，〔単〕ミヤマヌカボ，エゾヌカボ，ヒゲノガリヤス，アズマガヤ，カリヤス，ヌマガヤ，ミタケスゲ，ヤマタヌキラン，ハガクレスゲ，タカネハリスゲ，オオツルスゲ，サギスゲ，ミヤマイヌノハナヒゲ，ミヤマホソコウガイゼキショウ，ネバリノギラン，ツバメオモト，ヒメサユリ，キンコウカ，キヌガサソウ，クルマバツクバネソウ，タケシマラン，ヒメイワショウブ，チシマゼキショウ，コバイケイ，タカネアオヤギソウ，ウチワドコロ，コアニチドリ，イチヨウラン，コイチヨウラン，アオスズラン，オニノヤガラ，フタバラン，ミヤマフタバラン，アリドオシラン，ハクサンチドリ，オノエラン，アケボノシユスラン，ノビネチドリ，ジンバイソウ，コバノトンボソウ，キソチドリ，ホソバノキソチドリ，オオヤマサギソウ，トキソウ。〔離〕ミヤマヤナギ，ミヤマハンノキ，ネコシデ，ダケカンバ，ウダイカンバ，オヤマソバ，センジユガンピ，オオバショウマ，ミヤマハンショウズル，バイカオウレン，ミツバオウレン，シラネアザミ，キンバイソウ，ヒロハヘビノボラズ，ホソバノイワベンケイ，コマガタケスグリ，フキユキノシタ，ズダヤクシユ，ノウゴイチゴ，ミヤマキンバイ，ゴヨウイチゴ，ミヤマウラジロイチゴ，コガネイチゴ，ベニバナイチゴ，シロバナトウウチソウ，タカネザクラ，オオヤマザクラ，カスミザクラ，ハクサンフウロ，ツルシキミ，ガンコウラン，オオツルスゲ，フウリンウメモドキ，ヒメモチ，アカミノイヌツゲ，ムラサキツリバナ，メグスリノキ，ベニイタヤ，キバナノコマノツメ，ウスバスミレ，オオバキスミレ，ゴゼンタチバナ。〔合〕イワウメ，コイチヤクソウ，ジンヨウイチヤクソウ，ヒメシヤクナゲ，コメバツガザクラ，ウラシマツツジ，イワヒゲ，ハリガネカズラ，アカモノ，シラタマノキ，ジムカデ，イソツツジ，ミネズオウ，ツルコケモモ，アオノツガザクラ，ツガザクラ，シヤクナゲ，ハクサンシヤクナゲ，オオバツツジ，バイカツツジ，オオコメツツジ，トウゴクミツバツツジ，ミヤマホツツジ，イワツツジ，クロウスゴ，クロマメノキ，シヤクジヨウソウ，ヒナザクラ(南限界)，ホソバノツルリンドウ，イワイチヨウ，ミヤマリンドウ，オオバミゾホオズキ，ミヤマクワガタ，ヤマウツボ，ムシトリスミレ，キバナウツギ，リンネソウ，コキンレイカ，レンプクソウ，エゾウサギギク，チヨウジギク，ヒトツバヨモギ，タチアザミ，ムカシヨモギ，ミヤマアズマギク，ミズギク，ウスユキソウ，ミヤマウスユキソウ，オタカラコウ，メタカラコウ，カイタカラコウ，コウリンカ，ミヤマキタアザミ，クロトウヒレン。

○赤井谷地（福島県北会津郡湊村）

植物〔羊〕ヤマドリゼンマイ，イヌスギナ，ヤチスギラン，ミズニラ。〔単〕ホロムイソウ，アギナシ，マルバオモダカ，ヌマガヤ，オニナルコスゲ，ミタケスゲ，サギスゲ，ワタスゲ，コマツカサススキ，ヒライ，ミカズキグサ，オオイヌノハナヒゲ，クログワイ，ザゼンソウ，ミズバショウ，コオニユリ，ノハナショウブ，カキツバタ，サギ

ソウ，コバノトンボソウ，サワラン，ミズチドリ。〔離〕ホソバヤノネグサ，リユウキンカ，モウセンゴケ，ウメバチソウ，ホロムイイチゴ，ガンコウラン，オオバウメモドキ，イソノキ。〔合〕レンゲツツジ，コケモモ，クサレダマ，ミツガシワ，リンドウ，エゾムラサキ，ムシヤリンドウ，ヒメハツカ，ムラサキミミカキグサ，ハナムグラ，キヌタソウ，サワギキヨウ，マアザミ，オオニガナ，ミズギク（天然記念物として保存されている)。

○**飯豊山**（福島，山形，新潟県境）

原標本植物 *Platanthera sororia* Schlecht. Fedde, Rep. **2**: 166 (1906). *Nepeta Fauriei* Lév.〔ミソガワソウの異名〕Fedde, Rep. **9**: 245 (1911). *Epilobium Nakaharanum* Nakai アシボソアカバナ 植雑 **25**: 149 (1911). *Euphrasia nummularia* Nakai マルバコゴメグサ Fedde, Rep. **12**: 34 (1912) 他，磐梯山産). *Aconitum nipponicum* Nakai ミヤマトリカブト 植雑 **31**: 26 (1917) 他，白馬岳). *Angelica Matsumurae* var. *glabra* Koidz. クナシミヤマシシウド 植雑 **31**: 136 (1917)（他，吾妻山）*Taraxacum patulum* H. Koidz. イイデタンポポ 植研 **9**: 353 (1933). *Eubotryoides Grayana* var. *oblongifolia* forma *leiocarpa* Hara オオハナヒリノキ l. c. **11**: 629 (1935). *Goodyera pendula* var. *brachyphylla* F. Maekawa ヒロハノツリシユスラン l. c. 305 (1935). *Trollius japonicus* forma *plenus* F. Maekawa ヤエザキシナノキンバイ l. c. **12**: 139 (1936). *Scabiosa Fischeri* var. *longiseta* Hara ミヤママツムシソウ 植雑 **51**: 894 (1937). *Boehmeria Sieboldiana* var. *ovata* Satake ヒロハノナガバヤブマオ 植研 **14**: 263 (1938). *Gentiana nipponica* var. *robusta* Hara イイデリンドウ l. c. **21**: 19 (1947). *Adenophora nikoensis* forma *globiflora* Hiyama マリシヤジン l. c. **26**: 157 (1951).

植物〔羊〕ヒメハナワラビ，コウヤコケシノブ，オクヤマワラビ，ミヤマシシガシラ，オオミヤマイヌワラビ，オシダ，ミヤマベニシダ，オオバショリマ，ミヤマワラビ，ホテイシダ，カラクサイノデ，ヒメスギラン，コケスギラン。〔裸〕ハイマツ，キタゴヨウマツ，ミヤマネズ。〔単〕ミヤマヌカボ，タカネコウボウ，カニツリノガリヤス，オオヒゲガリヤス，ヒゲノガリヤス，ムツノガリヤス，ミヤマコメススキ，コメススキ，タテヤマスゲ，コタヌキラン，イトキンスゲ，ヒメスゲ，ナガボノコジユズスゲ，ミヤマイヌノハナヒゲ，ミネハリイ，ミヤマホソコウガイゼキシヨウ，タカネスズメノヒエ，ミヤマヌカボシソウ，ギヨウジヤニンニク，ニツコウキスゲ，ヒメサユリ，キヌガサソウ，オオバタケシマラン，ヒメイワシヨウブ，チシマゼキシヨウ，コバイケイ（ウラゲコバイケイもある），コアニチドリ，コイチヨウラン，ミヤマフタバラン，アリドオシラン，ハクサンチドリ，タカネトンボ，コバノトンボソウ，オオヤマサギソウ，ミヤマチドリ，ホソバノキソチドリ。〔離〕ミヤマヤナギ，ミヤマカワラハンノキ，ヤハズハンノキ，ミヤマハンノキ，ネコシデ，ダケカンバ，イブキトラノオ，オ

ンタデ，ムカゴトラノオ，タカネスイバ，タカネナデシコ，センジユガンピ，タカネツメクサ，エゾフスマ，ヤマグルマ，オオレイジンソウ，ハクサンイチゲ，ミヤマハンショウズル，コシジオウレン，ミツバオウレン，シラネアオイ，メヤマキンポウゲ，シナノキンバイ，ヒロハヘビノボラズ，ミヤマタネツケバナ，ハクセンナズナ，ホソバイワベンケイ，アラシグサ，ヒメミヤマウメバチソウ，ヤシヤビシヤク，フキユキノシタ，マルバイワシモツケ，タカネナナカマド，ノウゴイチゴ，ミヤマダイコンソウ，チングルマ，ミヤマキンバイ，ゴヨウイチゴ，コガネイチゴ，ベニバナイチゴ，マルバフユイチゴ，タカネザクラ，イワオウギ，オヤマノエンドウ，ハクサンフウロ，ガンコウラン，アカミノイヌツゲ，ヒメモチ，ホナガクマヤナギ，キバナノコマノツメ，オオバキスミレ，ミヤマツボスミレ，コアカバナ，シラネニンジン，ハクサンサイコ，イワテトウキ，イブキゼリ，ミヤマセンキユウ，オオカサモチ，ゴゼンタチバナ。〔合〕イワウメ，コメバツガザクラ，ウラシマツツジ，イワヒゲ，コシノハナヒリノキ，ミネズオウ，ツガザクラ，アオノツガザクラ，ハクサンシヤクナゲ，オオバツツジ，ミヤマホツツジ，クロウスゴ，クロマメノキ，ナンキンコザクラ，オオサクラソウ，オオツマトリソウ，イソイチヨウ，ミヤマリンドウ，ハナイカリ，トウヤクリンドウ，カリガネソウ，タテヤマウツボグサ，ホソバコゴメグサ，オオバミゾホオズキ，ハンカイシオガマ，ヨツバシオガマ，ミヤマシオガマ，オニシオガマ，ヒメクワガタ，ミヤマクワガタ，ムシトリスミレ，ハクサンオオバコ，ミヤマキヌタソウ，リンネソウ，コキンレイカ，ミヤマニガウリ，ヒメシヤジン，ミヤマシヤジン，イワギキヨウ，チシマギキヨウ，ウサギギク，チヨウジギク，ミヤマオトコヨモギ，ヒトツバヨモギ，タカネヨモギ，イワインチン，タチアザミ，ナンブタカネアザミ，ミヤマアズマギク，ミヤマコウゾリナ，タカネニガナ，ミヤマウスユキソウ，カイタカラコウ，オタカラコウ，ミヤマキタアザミ，ミヤマアキノキリンソウ。

○ 日鮮産植物小記（佐方敏男）Toshio SAKATA: Notes on some plants of Japan and Korea.

1. *Cirsium chikushiense* Koidz. form. **albiflorum** Sakata, nov.

   Flores albi. Nom. Jap. Shirobana-nomaazami.

   Hab. Prov. Satsuma: in itinere ad. Mt. Isoma, Kaseda-chō, ubi cum typico mixte unum crescit (Oct. 26, 1950—T. Sak.).

2. *Oxalis corniculata* L. form. **plena** Sakata nov.

   Flores prllescenti pleni, sepalis petalisque angustioribus uterque 10, staminibus 5. Nom. Jap. Hoshizaki-katabami.

Hab. Prov. Satsuma; circa Banseichō (Jun. 20, 1948—T. Sak.).

3. *Parabenzoin trilobum* Nak. form. **integrum** Sakata, nov.
Folia integra vel subintegra. Nom. Jap. Maruba-shiromoji.
Hab. Hondo: Prov. Iwami, prope Shigaku pede Mt. Sambe-san (Aug. 11, 1949—T. Sak.).

4. *Rosa Luciae* Fr. et Sav. var. *Onoei* Momiyama form. **plena** Sakata, nov.
Flores pleni. Nom. Jap. Yae-nioiibara.
Hab. Prov. Satsuma: ad pedem orientalem Mt. Shirakame, Kaseda-chō (Mai. 23, 1948—T. Sak.).

5. *Gardenia jasminoides* Ellis var. *jasminoides* form. **globicarpa** Sakata, nov.
Bacca globosa fere non costata ca 1.2 cm diametro, calyce coronata, calysis laciniis verticalibus lineari-subulatis 1.5 cm longis. Pedicelli 1 cm longi. Folia oblonga vel late oblanceolata 6 cm longa 2 cm lata. Flores mini ignoti. Nom. Jap. Marumino-kuchinashi.
Hab. Prov. Satsuma: circa Akōgi prope Kasasa-chō (anno 1948—Kikuko Matsuo.)

6. *Tubocapsicum anomalum* Mak. form. **longicarpum** Sakata, nov.
Frucutus ellipsoideus. Folia angutiora. Nom. Jap. Nagamino-hadakahodzuki.
Hab. Prov. Satsuma: Mt. Chōyasan, Kaseda-chō (Aug. 30, 1948—T. Sak.).

7. *Swertia Tachiroi* Mak. form. **immaculata** Sakata, nov.
Petala intus immaculata. Nom. Jap. Hoshinashi-hetsukarindo.
Hab. Prov. Ōsumi: Mt. Hoyoshidake (Nov. 17, 1956—F. Nishimoto).

8. *Cephalanthera falcata* Lindl. form. **variegata** Sakata, nov.
Folia aureo-variegata. Nom. Jap. Suji-kinran.
Hab. Prov. Satsuma: Mt. Chōyasan, Kaseda-shi (Apr. 29, 1957—T. Sak.).

9. *Flagellarisaema thunbergii* Nak. var. **corniculatum** Sakata, nov.
Appendix spadicis parte incrassato superiore cornibus atropurpureis paucis instructa, cetera ut in typico. Nom. Jap. Kuchihige-urashimaso.
Hab. Prov. Satsuma: Mt. Chōyasan, Kaseda-shi (Apr. 29, 1957—T. Sak.).

10. *Sambucus chinensis* Lindl. form. **variegata** Sakata, nov.
Folio albo- vel aureo-variegata. Nom. Jap. Fuiri-sokudzu.
Hab. Prov. Satsuma: in itinere Bansei, Kaseda-shi (Jul. 15, 1957—T. Sak.).

11. *Plantago asiatica* L. var. *densiuscula* Pilger form. **heterostachya** Sakata, nov.
Planta caulescens. Caulis erectus, glaber, 15 cm altus, multi-scapiger, scapis

axillaribus, ad 10 cm longis, superioribus brevissimis. Folia radicalia rosulata, ovata, ad 10 cm longa, longe petiolata; caulina conformia minora laxe disposita, sed in summo congesta. Nom. Jap. Kukidachi-ōbako.

Hab. Prov. Satsuma: in herbidis Bansei, Kaseda-shi (Mai. 19, 1957—T. Sak.).

12. *Milletia japonica* A. Gray form. **alborosea** Sakata, nov.

Flores alborosei. Nom. Jap. Akebono-natsufuji.

Hab. Prov. Satsuma: circa Bansei, Kaseda-shi (Aug. 18, 1957—T. Sak.).

13. *Chirta primuloides* Ohwi form. **immaculata** Sakata, nov.

Corollae intus immaculatae. Nom. Jap. Funashi-iwagiri.

Hab. Prov. Satsuma: ad rupibus montis Isoma, Kaseda-chō (Mai. 5, 1951—T. Sak.).

14. *Farfugium japonicum* Kitam. form. **fissile** Sakata nov.

Corollae radii apice profunde trifidae. Nom. Jap. Hosozaki-tsuwabuki.

Hab. Prov. Satsuma: circa Kaseda-si (Dec. 14, 1956—T. Sak.).

15. *Stephanotis japonica* Mak. form. **elliptica** Sakata, nov.

Folia plerumque elliptica inferne attenuata basi haud cordata. Nom. Jap. Satsuma-shitakisō.

Hab. Prov. Satsuma: Mt. Iwato prope Makurazaki (Mai. 14, 1948—T. Sak.).

16. *Bupleurum euphorbioides* Nak. var. **alpestre** Sakata, nov.

A type differt caule humiliore, involucri involucellique foliolis latioribus apice acuminatis longe caudatis. Nom. Jap. Miyama-taigekisaiko.

Hab. Korea septentrionalis: in regione alpina Mt. Shajitsuhō (anno 1936—T. Sak.).

17. *Cirsium Maackii* Max. form **albiflorum** Sakata, stat. nov.

C. Maackii var. *albiflorum* Sakata in Journ. Kor. Loc. Pl. no. 1, 3 (1935). Nom. Jap. Shirobana-karanoazami. Hab. Korea media.

18. *Monochoria vaginalis* Presl. var. *plantaginea* Solms-Laub. form. **albiflora** Sakata, comb. nov.

M. plantaginea form. *albiflora* Sakata in Suigen Nōgakkaihō (Dec. 1943). Nom. Jap. Shirobana-konagi. Hab. Korea sept.

19. *Utricularia surea* Lour. form. **koreana** Sakata, comb. et stat. nov.

U. pilosa var. *koreana* Sakata in Journ. Chōsen. Nat. Hist. Soc. no. 20 (1935). Nom. Jap. Korai-notanukimo. Hab. Korea media.

20. *Lathyrus Vaniotii* Lev. et Vnt. form. **ovatus** Sakata, stat. nov.

L. Vaniotii var. *ovatus* Sakata in Journ. Korean Loc. Pl. no. 1, 1 cum fig. (1935).

Nom. Jap. Hiroha-chosenyamaendō. Hab. Korea sept.

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1. シロバナノマアザミ（新称）

ノマ（野間）アザミの白花品。鹿児島県加世田市西南の磯間山附近の路傍で 1950 年 10 月に発見採集した。

2. ホシザキカタバミ（新称）

所在に多い雑草カタバミの一新品。花は淡黄色，萼及び花弁の数は倍加し雄蕊数は半減しているほか常品と変りがない。前記加世田市万世の産。1948 年に採集した。

3. マルバシロモジ（新称）

シロモジの葉が分裂していない一品。1949 年夏岡本大二郎氏（現農林省中国農試験技官）の厚意により島根県三瓶山に採集時志学附近に発見採集した。

4. ヤエニオイイバラ（新称）

ニオイイバラの八重花品。花径は 3 cm 許りで常品より開花が 1 週間から 10 日位おくれる。加世田市白亀山中に 1948 年 5 月発見採集した。本種研究のため必要な標本を御恵送下さつた静岡大学農学部斉藤全生氏に深謝する。

5. マルミノクチナシ（新称）

クチナシの果実が小形球状で直径 1.2 cm 位，縦稜は不明瞭単に 9 主脈があるだけの異品。元加世田高校生徒松尾喜久子嬢が加世田市に近い赤生木で 1948 年に採集したもので未だ花を見る機会を得ない。

6. ナガミノハダカホオヅキ（新称）

楕円形果をつけるハダカホオヅキの一新品。加世田市長屋山の産。1948 年に採集。

7. ホシナシヘツカリンドウ（新称）

ヘツカリンドウの常品は平開した花弁の中央部に一個の黄緑腺体とその上方部に紫褐色の細点を密布するが 1956 年秋西元藤吉氏（現鹿児島県立川辺高校教諭）が大隅国高山町に近い甫与志岳で採られたものは全然細点がない一新品であるから上記の新名を附した。

8. スジキンラン（新称）

キンランの葉上黄色縦斑のある一品。前記長屋山頂上附近で 1957 年に採集した。

9. クチヒゲウラシマソウ（新称）

ナンゴクウラシマソウの一変種。肉穂花序附属鞭状物の基部膨大部（黄白色）と其先端暗紫色鞭状部との境の附近に暗紫色小角状突起数個が集つているのが著しい異点であ

る。前記長屋山中の産。1957 年に採集。

10.　フイリソクズ（新称）

ソクズの斑入葉の一品。1957 年前記万世の野外に発見し移植園観察を続けているが緑葉や斑入葉とりまぜて新葉が次々に開出している。

11.　クキダチオオバコ（新称）

オオバコに地上茎が 15 cm 位抽出してそれに数葉の葉を生じその葉腋にそれぞれ 1 本宛の穂状花序を出す異点。ヤグラオオバコやヤツマタオオバコなどとは余程趣を異にしているがこの性質の遺伝関係はまだ不明である。一応新名をつけて今後の研究に俟つこととする。同市万世の路傍に 1957 年 1 株を発見採集した。

12.　アケボノナツフジ（新称）

ナツフジの花弁が淡紅色に染つた品種。蕾の時ほどこの色は著しい。前記万世の産。1957 年に採集した。

13.　フナシイワギリ（新称）

花冠の内面に濃紫色斑のないイワギリソウの一品。上記磯間山の岩壁上で 1951 年に採集。

14.　ホソザキツワブキ（新称）

1 頭状花中にある 10 個内外の舌状花は悉く先端から 3 深裂するツワブキの異品。加世田市で 1956 年秋に採集した。

15.　サツマシタキソウ（新称）

花枝附近の葉は常品の如く心底とならず鋭又は鈍底となるシタキソウの一品種。薩摩半島南端の漁港枕崎市岩戸山の産。1948 年に採集。本種の研究に当り 1949 年夏鹿児島大学農学部腊葉室の他産のシタキソウ標本を見せて下さつた初島住彦博士にお礼を申し上げる。

16.　ミヤマタイゲキサイコ（新称）

北部朝鮮の高山遮日峰頂附近のタイゲキサイコは常品と異なり草丈低く花序の小苞及び苞葉は幅広く先端が著しく長く尾状に細まつているので一変種と見做したい。本変種の詳細な記載及原図原稿は他の原稿と共に 38 度線に近接の朔寧に於て不法なる保安署員にあえなくも没収されてしまつたことを附記しておこう。

17～20.　筆者が先に発表した朝鮮植物の変種又は品種の学名変更で，それ等はシロバナカラノアザミ，シロバナコナギ，コウライノタスキモ及びヒロハチヨウセンヤマエンドウである。

本文を終るに当り，筆者は 20 数年来何くれと絶えず力づけて下さつた植木秀幹先生に衷心謝意を述べなければならない。(1957，9，25 記)

（鹿児島県加世田高等学校）

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